In 1896 Sir Boverton made a most valuable contribution to the industry he had so much at heart by the publication of his great work, "A Treatise on Petroleum." This has already passed through three editions, and a fourth was in course of preparation at the time of his death. He was also primarily responsible for the foundation of the Institute of Petroleum Technologists, of which he was the first president. In 1873 he married the eldest daughter of the late Mr. Frederick Letchford, who survives him. His only son, Bernard Boverton, died in 1911, leaving a son, Thomas Boverton, born in 1906, who now succeeds to the baronetcy.

A. C. K.

NOTES.

AMONG the additional honours conferred on the occasion of the King's birthday we notice the following:—*G.C.B.:* Sir H. Llewellyn Smith, Secretary, Board of Trade. *K.C.B.:* Mr. Stanley M. Leathes, First Civil Service Commissioner. *C.B.:* Mr. R. J. G. Mayor, Principal Assistant Secretary (Universities), Board of Education, and Prof. S. J. Chapman, Senior Assistant Secretary, General Economic Department, Board of Trade. *Knight:* Col. G. P. Lenox-Conyngham, Superintendent of the Trigonometrical Survey, Dehra Dun, India.

THE following medical men are among those whose names are included in a list of further honours and appointments made on the occasion of the King's birthday:—*K.C.B.:* Col. W. Taylor and Lt.-Gen. Sir W. Babtie. *K.C.M.G.:* The Hon. Sir John McCall (Agent-General in London for the State of Tasmania), Col. W. T. Lister, Major-Gen. H. N. Thompson, Brig.-Gen. J. Moore, and Major-Gen. Sir W. P. Herringham. *K.C.V.O.:* Mr. J. O. Skevington. *K.B.E.*. Col. H. A. Ballance, Col. R. H. Firth, Col. C. G. Watson, Major-Gen. G. B. Stanistreet, Col. H. Davy, Lt.-Col. and Bt. Col. G. Sims Woodhead, Lt.-Col. Sir S. F. Murphy, Lt.-Col. D'Arcy Power, Lt.-Col. J. L. Wood, Lt.-Col. H. McI. W. Gray, Lt.-Col. Sir A. W. Mayo-Robson, Col. C. J. Symonds, Maj. and Bt. Lt.-Col. F. W. Mott, F.R.S., Major-Gen. Sir Robert Jones, Lt.-Col. A. D. Reid, Col. H. G. Barling, and Col. J. Swain.

AIRCRAFT crews are speeding up for the eastward flight across the Atlantic, and, weather permitting, fresh attempts will be made very shortly. The *Times* of June 10, in a cablegram from St. Johns (N.F.) dated June 9, says:—"The Vickers-Vimy machine ascended for its trial flight at 8.17 a.m. (Greenwich mean time). It descended after a spin of about forty minutes. . . . The airmen report that everything was working satisfactorily. . . . The machine will now await suitable weather for the Atlantic flight." The crew of the Handley-Page machine had earlier expressed the hope to be ready for the flight by June 15. There is the advantage now of the full moon. At the time of going to press the weather conditions over the eastern Atlantic were not very favourable. There were cyclonic disturbances in the Atlantic at no great distance from the Irish coast. If the aeroplanes which are being prepared had been ready on June 3, they would probably have experienced very favourable weather for the flight. At St. Johns a very light north-east wind was blowing and the weather was clear. During the night of June 3–4 no wireless weather message from the open Atlantic reported more than a fresh wind, and the direction was uniformly from the westward. There was a good deal of cloud with some rain and mist on the British coasts, which seemed the only unfavourable factor. "The Life-History of Surface Air-Currents," published by the Meteorological Office, giving the trajectories for mid-June, 1883, from some Atlantic synchronous charts, shows the surface wind from Newfoundland to travel up the Davis Strait and down to the eastward of Greenland, striking fairly southwards to the equator, so that all June weather is not favourable to the trans-Atlantic flight. Current weather conditions alone can be of use for safe guidance.

THE thirtieth annual conference of the Museums Association will be held in the University Museum, Oxford, on July 8–10, under the presidency of Sir Henry Howorth. The chief subjects for discussion are the question of transferring the control of museums to the education authority and the desirability of a diploma for museum curators and the necessary course of training. Among papers with a scientific bearing will be "Suggestions for Preparing and Mounting Museum Specimens," by L. P. W. Renouf; "The Pitt-Rivers Museum," by H. Balfour; and "Timber Collections for Museums," by H. Stone. Prof. Sollas will demonstrate the arrangement of the geological collections and his section-cutting machine, Prof. Poulton will elucidate the collections in his care, and contributions are promised by Prof. J. L. Myres and Dr. H. M. Vernon, among others. Visits will be paid to other museums and places of historic interest in Oxford. Each museum subscribing one guinea may send three delegates, and individuals can join on payment of half a guinea. The secretary (whose resignation we regret to see announced) is Mr. W. Grant Murray, Art Galleries, Swansea, and the local secretary, to whom inquiries about accommodation should be addressed as soon as possible, is Miss W. Blackman, of the Pitt-Rivers Museum, Oxford.

THE joint session of the Aristotelian Society, the British Psychological Society, and the Mind Association, to take place at Bedford College on July 11–14, promises some communications of present scientific interest. Dr. Rivers will expound a new theory of the repression of instinct in normal conscious life, to which he has been led in the study of war neuroses in the military hospitals. He is to open a symposium on "Instinct and the Unconscious," in which Dr. C. G. Jung, the leader of the Zurich school of psychopathology, will take part. The important neurological discoveries of Dr. Head will also be discussed in their bearing on the metaphysical problem of the nature of the ultimate data of science. This symposium will be presided over by Sir J. Larmor. It will be opened by Prof. Whitehead, who, with Sir Oliver Lodge and Prof. J. W. Nicholson, will represent different views on the questions raised by the recent relativity and quantum theories. In pure philosophy Mr. Bertrand Russell will expound a new view of what propositions are and how they mean, the result of a recent critical examination of the new behavourist psychology. Lord Haldane is to preside over a symposium on the relation of the finite to the infinite mind, which the Dean of Carlisle will open, and in which the Bishop of Down will take part. The theory of knowledge will be discussed in a symposium on "Knowledge by Acquaintance," at which Prof. Sorley will preside. The arrangements announced in the programme do not exhaust the interest of the session, as there are to be informal meetings for the reception of short communications and discussions on present controversies.

THE ladies' *soirée* of the Royal Society will be held at Burlington House on Wednesday, June 25, at 8.30.

THE general board of the National Physical Laboratory will meet at Bushy House, Teddington, on Tuesday, June 24.

DR. J. J. SIMPSON has been appointed keeper of zoology in the National Museum of Wales, and Dr. Ethel N. Thomas keeper of botany.

THE Bakerian lecture of the Royal Society will be delivered on June 19 by the Hon. R. J. Strutt, F.R.S., on "Phosphorescence and Fluorescence in Metallic Vapours."

WE regret to announce the death on June 10, at sixty-nine years of age, of the Ven. William Cunningham, D.D., Archdeacon of Ely, and fellow of Trinity College, Cambridge. Dr. Cunningham was the author of a number of important works on the economic aspects of the history of commerce, and from 1891 to 1897 was professor of economics at King's College, London.

IT is announced in *Science* that the Edison medal for meritorious achievement in electrical science or electrical engineering has been awarded to Mr. Benjamin G. Lamme, of the Westinghouse Electric and Manufacturing Co., and was presented to him at the recent annual meeting of the American Institute of Electrical Engineers.

WE learn from the *Times* that an International Hydrographic Conference will meet in London on June 24. The conference will be representative of all maritime nations, except the Central Powers, Turkey, and Russia, and it is hoped that the hydrographic experts will settle many differences in respect to charting, hydrographic publications, and hydrography generally.

THE following have been nominated as officers and council of the Wild Bird Investigation Society for the year 1919–20:—*President:* Mr. J. H. Gurney. *Vice-Presidents:* Dr. F. G. Penrose, Prof. D'Arcy W. Thompson, and Mr. E. Wheler-Galton. *Council:* Mr. W. Berry, Mr. L. Greening, Mr. L. A. L. King, Dr. S. H. Long, Dr. Graham Renshaw, and Dr. F. Ward. *General Secretary and Editor:* Dr. W. E. Collinge.

THE presentation of the Albert medal of the Royal Society of Arts to Sir Oliver Lodge on June 6, "in recognition of his work as the pioneer of wireless telegraphy," has given much gratification to men of science. The developments of wireless telegraphy have been so remarkable that the early demonstrations of its practicability by Sir Oliver Lodge are likely to be forgotten except by the people who witnessed them. We are glad, therefore, that the Royal Society of Arts has by its award given public recognition of his pioneer work, and has distinguished itself by being the first to confer an honour so fully merited.

ON account of the very large number of applications that have been received by the organising committee of the forthcoming British Scientific Products Exhibition, to be held under the auspices of the British Science Guild, all the space available at the Central Hall, Westminster, has now been allotted, and no further applications can be considered. The exhibition will be open to the public from July 3 to August 5. Its scope will be more extensive than was possible at last year's display, when war conditions made it necessary to withhold from public view much of the scientific and technical work carried on in Great Britain. Striking testimony will be furnished of the enterprise of British manufacturers, and the uses they have made of science and invention in new industries and in the development of old.

A COPY of the annual report for 1918 of the council of the Philosophical Institute of Canterbury, New Zealand, has been received. From it we learn that early in the year the Government voted the sum of 500*l.* to the New Zealand Institute for research work. Five applications for allotments were made through the Institute of Canterbury, and the following grants were made to members:—200*l.* to Dr. W. P. Evans, for investigation of New Zealand brown coals; 50*l.* to Dr. Chas. Chilton, for investigation of New Zealand flax (phormium); and 30*l.* to Mr. L. J. Wild, for a soil survey of the Canterbury Plains district. The principal action of the institute in the direction of the co-ordination of science and industry during the past year led to the establishment by the board of governors of Canterbury College of a technological section in the public library. The need for modern technical literature has been felt very much during the past four years by those engaged in the many attempts to establish industries of a chemical, or more or less scientific, nature. This section, though yet small, will, if adequately supported, eventually prove of great industrial value. The institute's representative on the board of trustees of the Riccarton Bush reports that the Bush has been open to the public during the year at the usual times, and has been visited by large numbers. The Bush continues to be of great use to the botanical students in the neighbourhood of Christchurch and to members of the institute.

THE preparation of lac, one of the oldest Indian industries, has recently been investigated by the Imperial Government. Though other countries, notably Japan and German East Africa, have attempted the cultivation of lac, their efforts have so far proved fruitless, and India retains the monopoly of this important industry, which supplies exports amounting to 4 crores of rupees, or about 260,000*l.* The collection of the product is still largely confined to the wilder forest tribes, and their methods are careless, imperfect, and wasteful. The same may be said of the present methods of making shellac. There is a real danger that it may be replaced by a synthetic product, and the example of indigo shows the possibility that the industry may ultimately disappear. Not long ago the forest chemist at Dehra Dun worked out a method of extracting the pure lac-resin with a wood spirit. This and other suggestions for improvement of the manufacture are now being considered by the Government of India, and there seems reason to anticipate that, in the immediate future, India will be able to meet the ever-increasing demand for shellac.

A COMPREHENSIVE paper on the Orthoptera of Nova Scotia has been recently published by Mr. H. Piers (Proc. and Trans. Nova Scot. Inst. Sci., vol. xiv., part 3, 1918). In addition to careful diagnoses of the twenty-eight species enumerated, the author gives valuable distributional, bionomic, and economic notes. It is rather surprising that, with the exception of the imported cockroaches, no member of the Nova Scotian orthopteran fauna is found in Great Britain.

MR. W. DWIGHT PIERCE has published (Proc. U.S. Nat. Mus., vol. liv., No. 2242) a second supplement to his monograph on the Strepsiptera. He brings forward additional arguments for his contention that these curious parasites should be regarded as a distinct order of insects, describes their effects on various hosts, gives important morphological details (especially of the fascinating triungulin larvæ), and furnishes the student with extensive systematic revisions, including a diagnostic table of all known female Stylopidæ and a new summary of the geographical range of the 166 species of the order at present recognised. Of the sub-regions of A. R. Wallace, the South African, Siberian, Chilian, and New Zealand are still without records of these insects.

WE have received the seventy-ninth annual report, for the year 1918, of the Crichton Royal Institution, Dumfries—a mental hospital. With regard to admissions it is noted that there was a distinct increase in the proportion of cases attributed to such factors as emotional stress, overwork, and bodily ill-health, and a progressive decrease in the proportion of alcoholic cases. Influenza also accounted for some admissions. Various experiments on potato-growing, cattle-breeding and feeding, and sugar-beet growing were conducted at the farm. The institution possesses a completely equipped meteorological station, and a summary of the observations and records for 1918 is included in the report.

AN interesting paper on X-ray demonstration of the vascular system by injections is contributed by Mr. H. C. Orrin to the March issue of the *Archives of Radiology and Electrotherapy* (No. 224). It is claimed that such radiographs would be of the greatest value in the study of anatomy, showing the relative positions of various structures in a manner impossible by dissection alone. By using different injection fluids, veins and arteries may be shown by a gradation of tone. Mr. Orrin also hopes to be able to demonstrate nerves and lymphatics by this method. The plates which accompany the paper support the claims made, the minute ramifications of vessels in the hand, heart, viscera, etc., being beautifully demonstrated.

IN a paper on "The Cassiterite Deposits of Tavoy" (Rec. Geol. Surv. India, vol. xlix., p. 23, 1918), Mr. J. Coggin Brown points out that wolfram becomes separated from tin ore when washed out of a decaying lode on account of its rapid comminution and ultimate solution. As the author somewhat quaintly remarks, it "disappears long before its journey is ended." Much of the granite in the Tavoy district has been denuded to a level below that of the original lodes, the cassiterite being now represented only in the marginal contacts and the placer deposits. Another interesting mineral occurrence recently described in India is that of aquamarine in rich abundance in pegmatites in Kashmir (C. S. Middlemiss, *ibid.*, p. 161).

NO. 6 of vol. iii. of the *American Mineralogist* (price 50 cents) is devoted to the memory of René-Just Haüy, and includes a valuable series of portraits, otherwise difficult to obtain. The articles deal with various aspects of the life and work of "the father of crystallography," and Prof. E. T. Wherry shows how Fedorov's "crystallo-chemistry" and his own extension of Fedorov's layer-theory into the field of optical properties are developments of Haüy's principle of rationality. Appropriately enough, Prof. A. Lacroix has recently given us a careful biography and appreciation of Haüy's contemporary, Déodat Dolomieu (*Revue Scientifique*, No. 2, 1919), in which interesting details are given of Dolomieu's imprisonment in Palermo after Bonaparte's Egyptian expedition, and of the efforts of scientific men for his release. Finally, he was included by name in the terms of a treaty of peace.

DR. H. A. TEMPANY, director of agriculture, Mauritius, communicates to the *Agricultural News* (February 22, 1919) an account of the Casuarina woods in Mauritius. Since 1807 the whole of the lands along the sea-coast to a minimum depth of 81 metres from high-water mark have been Government property, and the habit of planting them with trees, mainly *Casuarina equisetifolia*, to ensure a supply of fuel for the sugar industry, and also as shelter belts for inland cultivation, gradually became general. Since 1895 the leasing of these lands has been carefully regulated, and conditions for cutting and replanting strictly specified. About two-thirds of the area, representing 4440 acres, are now planted with Casuarina, and the remainder is under coconuts or mixed species of trees. The Casuarina woods have also been utilised for pasturage; a grass (*Stenotaphrum glabrum*) will thrive luxuriantly in the shade of the trees, growing right up to the base of the trunks. Dr. Tempany states that, apart from their economic importance, these Casuarina plantations have great value from an æsthetic point of view, making the littoral of Mauritius the most charming that he has ever seen in any tropical country.

THE annual report of the Weather Bureau at Manila for 1916, with hourly meteorological observations, has only quite recently reached this country. The Philippines are said to have been extraordinarily free from typhoons, although the weather map of the Far East shows that the number of typhoons was not much different from the average. Wireless weather messages are received from the vessels of the Asiatic Fleet at sea, and they are said to be of the greatest value in forecasting the weather. The closest co-operation exists between the Weather Bureau and the aviation officers. During the year the seismograph at Manila registered 395 disturbances; of these only 75 originated within 100 kilometres of the observatory. At Batuan there were 1022 disturbances, which is the highest number of records from any station. The year 1916 was magnetically disturbed beyond the normal. Astronomical work was well maintained. Hourly readings of most meteorological elements are "read directly between the hours 6 a.m. and 7 p.m., while for the hours from 8 p.m. to 5 a.m. they are taken from self-registering apparatus." The metric system is followed throughout, as in former years, no cognisance being taken of the new units of measurement. There is an absence of rainfall and sunshine observations in the annual volume.

DURING the last three years a good deal of attention has been directed to the question of protecting the eyes of furnacemen from the injurious effects of the strong light from the furnaces. The United States Bureau of Standards has found it necessary to issue a third edition of its Technological Paper No. 93, first issued in November, 1917, on the properties of the various glasses now available. The paper contains curves showing the transmitting properties of a large number of glasses, and the following general conclusions are drawn:—For protection from ultra-violet light, black, amber, green, greenish-yellow, and red glasses are efficient. Against the infra-red rays, deep black, yellowish-green, sage-green, bluish-green, and gold-plated glasses are best.

IN a paper presented at the meeting of the physics and chemistry section of the Franklin Institute of Philadelphia in January last, and reproduced in the March and April issues of the Journal of the institute, Mr. Luckiesh gives the results of the work which has been done at the research laboratory of the General Electric Co. on the reduction of the visibility of aeroplanes. Visibility from above when an aeroplane is seen against the ground is best reduced by using on the top of the wings a very dark shade of green for the high lights, and a bluish-black for the shadows. The surfaces when finished should reflect between 4 per cent. and 5 per cent. of the incident light. Visibility from below in the daytime is best reduced by the use of translucent fabrics and dopes. By a suitable blue tint an aeroplane can be rendered almost invisible against a clear sky. Visibility at night is best reduced by painting the aeroplane a matt black.

The Cambridge Scientific Instrument Co. has issued two lists of thermometers suitable for industrial use. List No. 114 deals with glass thermometers for steam plant, the chemical trade, jam- and sugar-boiling, bakeries, breweries, cold stores, and the metal industries. The instruments are well protected, and range from −40° to 540° C. List No. 195 deals with distance thermometers required when the temperatures at a number of distant points are to be observed or recorded at some central office. They are of the resistance type, and for observation purposes are connected by plug switches to a current indicator in series with a small storage cell. The current is rendered independent of the change of electromotive force of the cell by the aid of a test-switch. For recording the temperatures continuously a thread-recorder is used. With both an indicator and a recorder installed any thermometer may be connected to the recorder and give a continuous record, while the other thermometers can, as desired, be connected to the indicator. In both lists full details as to construction and use of the instruments are given.

An article in *Engineering* for May 30 makes reference to the Still combined internal-combustion and steam engine which formed the subject of a paper read before the Royal Society of Arts on May 26 by Capt. F. E. D. Acland. This engine is an internal-combustion engine, the cylinder of which is jacketed with hot water at constant temperature. Heat abstracted from the combustion cylinder is employed in converting the jacket-water into steam. The jacket is connected to the water-space of a steam boiler, and this water, on its journey to the jacket, passes through a tubular heater, through which the exhaust gases pass. The steam and water leaving the jacket are led to the steam space of the same boiler. The exhaust gases on leaving the tubular heater are taken through a second heater, through which the feed-water is drawn. The steam from the boiler is used in a steam cylinder which forms the underside of the combustion cylinder. There is but one cylinder, the upper part of which is an internal-combustion cylinder, and the lower part a steam cylinder. The down stroke is an internal-combustion stroke, and the up stroke is a steam stroke. Remarkable economies are claimed. Thus a Still-Diesel engine with compounded steam side had a consumption of 0·302 lb. of Admiralty shale oil per brake-horse-power over one hour's run. Full test figures were not given in Capt. Acland's paper, which is somewhat unfortunate in view of the important features of the new engine. It is to be hoped that a complete record of engine dimensions and tests will be published in the immediate future.

The special catalogues of Messrs. H. Sotheran and Co., 140 Strand, W.C.2, are always of interest and value, and the latest one (No. 772), entitled "Bibliotheca Viatica," is no exception. It gives particulars of upwards of nine hundred second-hand works dealing with, among other subjects, maps and atlases, road, railway, and hydraulic engineering. There is also a section, necessarily not very lengthy, on books relating to ballooning and aeronautics. The catalogue contains many items likely to appeal to readers of Nature, and should be seen by them.

Messrs. Longmans and Co. have nearly ready for publication Dr. J. F. Spencer's "The Metals of the Rare Earths" and a new edition of J. F. Colyer's "Dental Surgery and Pathology." They have also in the press Dr. R. A. Houstoun's "The Elements of Physics" and E. W. Blocksidge's "Ships' Boats: Their Qualities, Construction, Equipment, and Launching Appliances." *Messrs. G. G. Harrap and Co., Ltd.*, are issuing "General Science," by L. Elhuff, and *Messrs. Baillière, Tindall, and Cox* promise a "Popular Chemical Dictionary," by C. T. Kingzett.

Messrs. W. Heffer and Sons, Ltd., Cambridge, offer in their latest catalogue (No. 179) some four hundred books in new condition at substantial reductions on pre-war prices. The list is a general one, but there is a section devoted to books on natural history and other branches of science. In it we notice Prof. J. C. Adams's "Scientific Papers," 2 vols.; J. G. Hagen's "Atlas Stellarum Variabilium," six series; R. Braithwaite's "The British Moss-Flora," 3 vols.; W. C. Hewitson's "Exotic Butterflies," 5 vols.; H. Seebohm's "The Turdidæ, or Family of Thrushes," edited and completed by R. Bowdler Sharpe, 2 vols.; Wilson and Evans's "Aves Hawaiienses," in parts; and sets of "Biologia Centrali-Americana." The catalogue is sent free upon application.

OUR ASTRONOMICAL COLUMN.

An Interesting Meteor.—A small fireball was seen on May 19, 11.39 G.M.T., by Mr. Denning at Bristol and by Mr. Mattey at Woolwich; it moved very slowly from a radiant point hitherto unknown in May at about 68°+63°. The Rev. M. Davidson has computed the real path, and finds that the height of the object was from 53 to 32 miles, the length of the observed luminous course 46 miles, and the velocity about 10 miles per second. The theoretical velocity is 14 miles per second, but atmospheric resistance must have greatly impeded the flight of the meteor. Mr. Mattey saw several other meteors during the latter half of May from the same radiant in Camelopardalus.

The Sun-spot Maximum.—In reporting on the sun-spots observed in the year 1918 Mr. Evershed, director of the Solar Physics Observatory, Kodaikánal, remarks that the maximum spot activity of the present cycle took place during the second half of 1917 for both hemispheres. This judgment may be accepted as correct, for though some hesitation has been felt in accepting this early date lest a secondary maximum should occur after a temporary decline, as has happened in previous cycles, these circumstances do not seem likely to occur. The date of the previous maximum has been placed in the early part of the year 1906, though the sun-spot activity of that year was inferior to that of 1905 and of 1907. Adopting these estimates as correct, the length of the period just ended is slightly above the average.

The Mount Wilson Observatory.—The stellar observations in the programme of the institution of which Prof. Hale is director, hitherto called the Mount Wilson Solar Observatory, California, or sometimes the Solar Observatory of the Carnegie Institution of Washington, have lately been increasing in importance. In view of this fact, and of the practical completion of the 100-in. reflector, which will add greatly to the range and number of night observations, it is proposed that the word "Solar" shall be dropped, and